Spray-coating of functional layers of OLED and OPV

Juliane Gabel, Peter Rensing
Holst Centre/TNO, High Tech Campus 31,
5605KN Eindhoven, The Netherlands

Presented at the 16th International Coating Science and Technology Symposium,
September 9-12, 2012, Midtown Atlanta, GA[1]

Current research towards the R2R production of OLEDSs and OPV focuses mainly on slot die coating and inkjet printing. Especially slot die coating has been proven to be a suitable method for the deposition of uniform thin layers. However, the quality of the coatings is largely influenced by the ink properties. Often there are strict requirements regarding viscosity and surface tension for coatability and jetability, restricting the range of suitable solvents and materials.

Ultrasonic spray coating on the other hand allows the usage of a far broader range of viscosity and surface tension. Even though these parameters still might have influence on the homogeneity of the coating they have no significant influence on the sprayability. Furthermore US spray coating allows varying the wetness of the coating. By adjusting fluid flow and spray distance inflight solvent stripping can be achieved allowing an almost dry deposition. This can be advantageous for a number of applications.

We have studied the US spray coating for a number of functional layers for OLED and OPV regarding achievable layer homogeneity and layer thickness control and have investigated the opportunities of quasi dry spraying.

The results of this study will be presented and the potential for device production will be discussed.